

F i n a l D r a f t

**Delta Protection Commission
Economic Sustainability Plan
Framework Study**

Volume I:

Framework for a
Delta Economic Sustainability Plan

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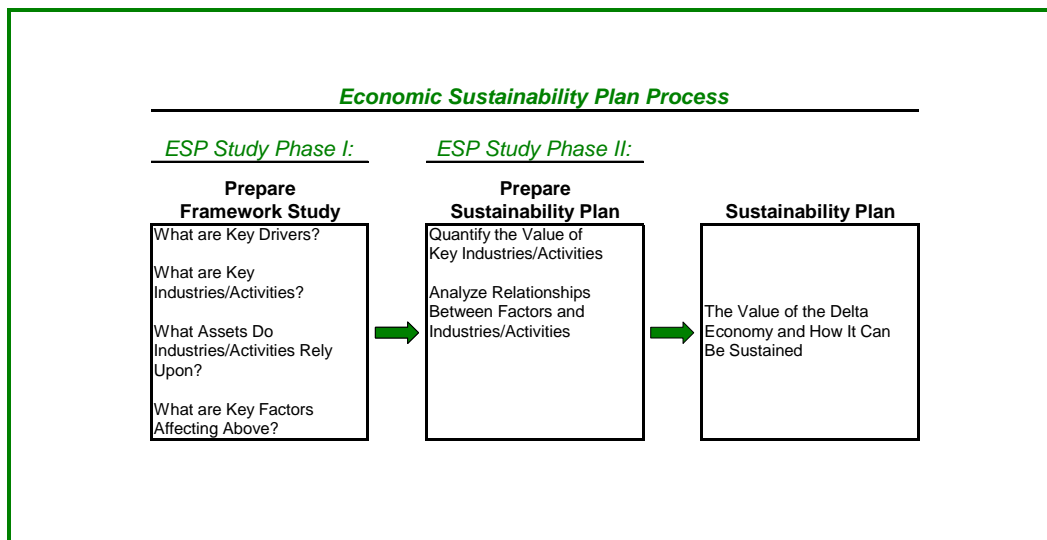
Delta Protection Commission
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Executive Summary

This document is one of two volumes representing the work product from the Economic Sustainability Plan Framework Study project. The Framework Study project is the first phase of a two-phase project that the Delta Protection Commission is undertaking to prepare an Economic Sustainability Plan for the Delta. The second volume of the Framework Study contains background data that supported preparation of the Framework Study, as well as information regarding the public outreach process conducted as part of the Frame Study. The Framework Study will serve as background, and provide guidance for the preparation of the Economic Sustainability Plan during the first half of 2011, for completion by no later than July 1, 2011. The following diagram shows the overall Economic Sustainability Plan process.

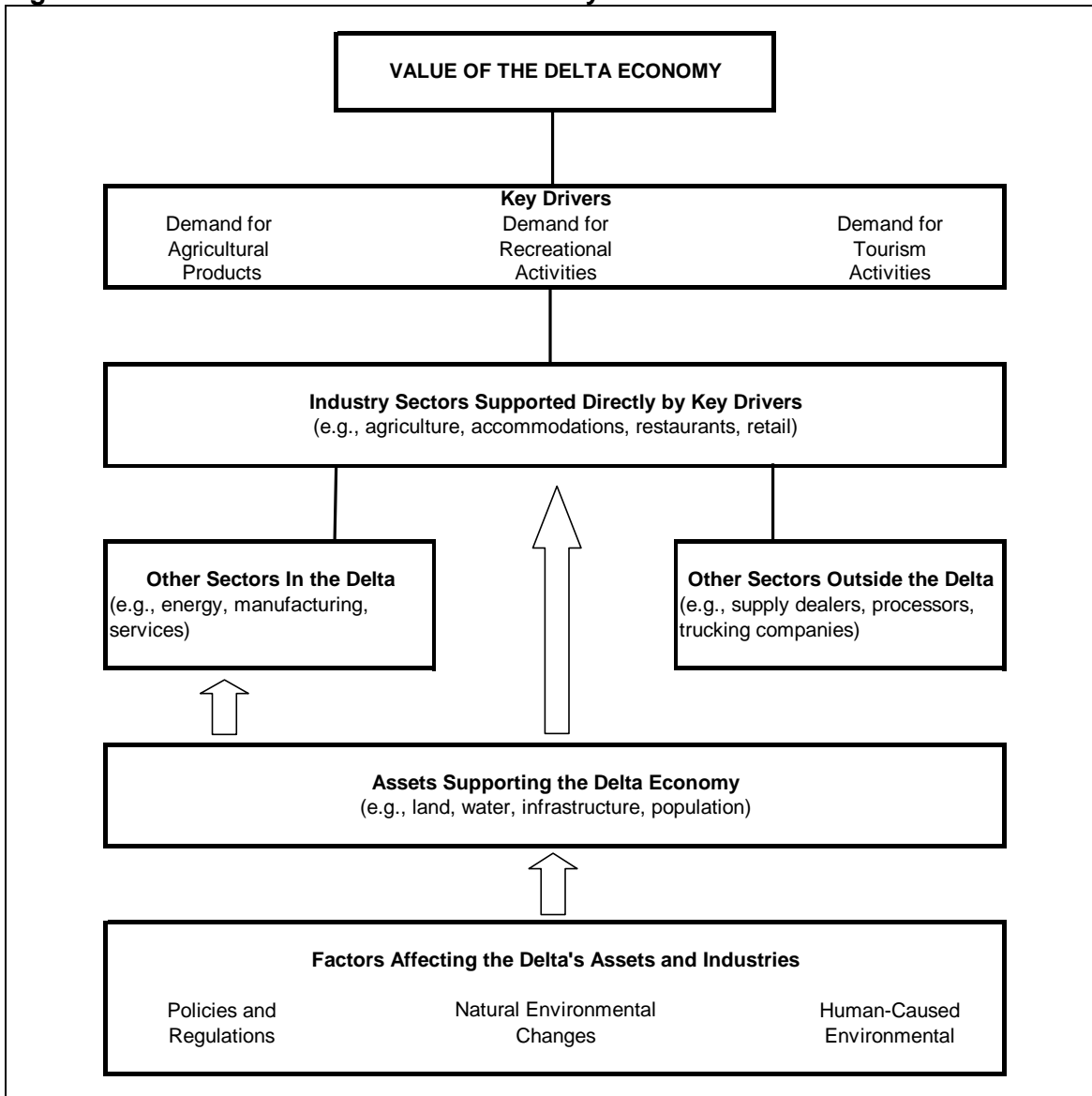
Figure ES-1: Economic Sustainability Plan Process



As indicated in Figure ES-1, a primary focus of the Economic Sustainability Plan will be to articulate the value of the Delta economy, and to lay out a plan for how the Delta economy can be sustained over time. A number of elements comprise the value of the Delta economy, including key and supporting industries within the Delta, and additional related industries that are located outside the Delta. Figure ES-2 on the following page illustrates components of the value of the Delta economy, and how various factors will affect assets and industries that contribute to the total value of the Delta economy.

In addition to the business activity that the Delta supports, the Delta also supports valuable cultural resources, environmental resources, and infrastructure systems that serve major portions of the larger California population and the statewide economy. It is important to recognize the contributions of a healthy Delta economy to maintaining these assets.

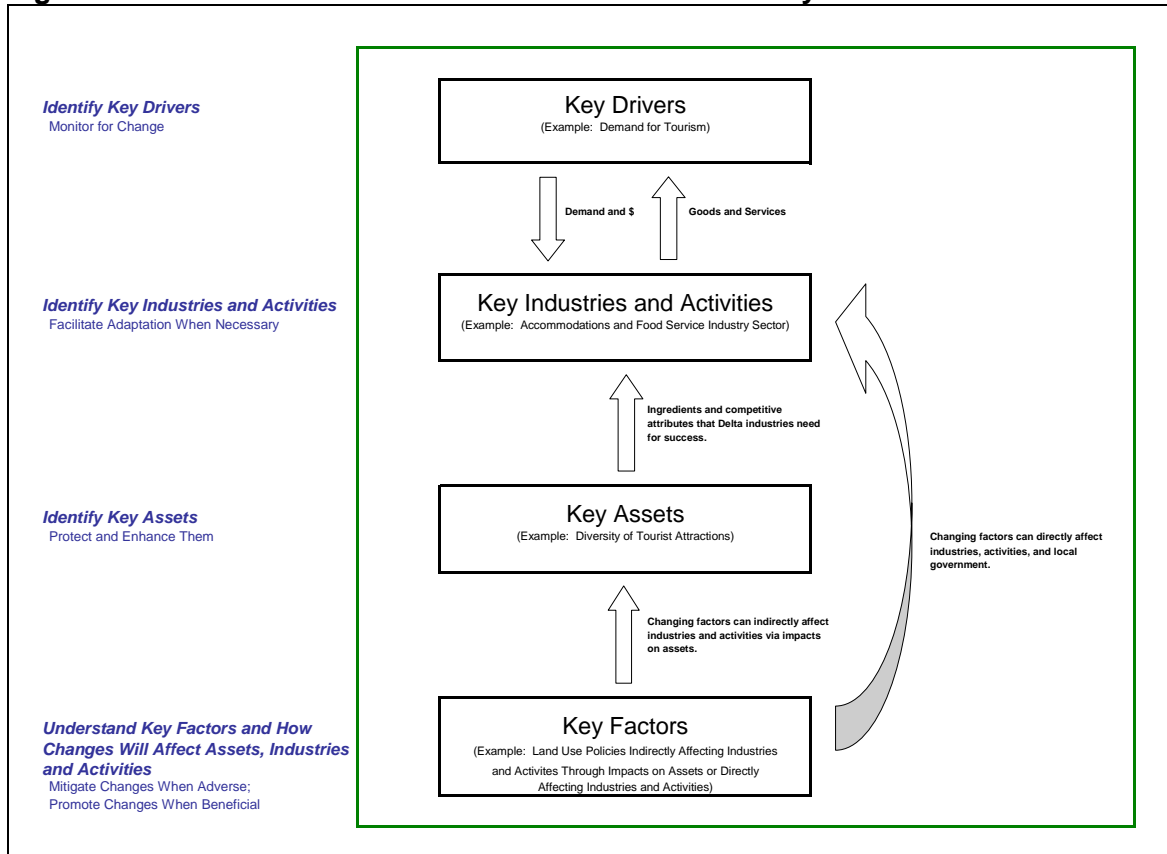
Figure ES-2: The Value of the Delta Economy



The framework for a sustainable Delta economy that is presented in this document will serve as a starting point for preparation of the Economic Sustainability Plan. The framework first identifies the key drivers of the Delta economy and the key business sectors that the drivers support. Then, the framework identifies the assets that support the key business sectors. Finally, the framework identifies important factors that will affect the Delta's economic sustainability over time. By using this framework guide, the Economic Sustainability Plan can be developed to further articulate the value of the Delta economy, and to serve as a basis to help ensure the appropriate responses to changes in

factors over time, so that the Delta economy can adapt and thrive. The following diagram illustrates the structure of the framework.

Figure ES-3: Framework for a Sustainable Delta Economy



What is the Delta Economy?

Key Drivers of the Delta Economy

As identified in the main body of this document, the key drivers of the Delta economy include demand for agricultural products and demand for tourism and recreation.

Key Sectors of the Delta Economy

The key drivers generate economic activity in a number of business sectors and activities within the Delta. Those business sectors that are most closely associated with the unique Delta environment include:

- Agriculture
- Accommodation and Food Services

- Arts, Entertainment, and Recreation
- Retail
- Manufacturing
- Miscellaneous Services

These key Delta business sectors support other sectors within the Delta itself, and Delta economic activity in turn supports other business activity in surrounding regions, through business-to-business relationships. Additional economic activity is supported inside and outside the Delta economy through the expenditure of the incomes of Delta households.

What Are the Delta's Important Assets and Resources?

The Delta has a number of key economic assets that distinguish it from other regions within the State of California, and which support the unique mix of economic activity that occurs within the Delta. These assets include:

- Water supply and quality
- Land supply
- Ecological health
- Accessibility
- Infrastructure (including transportation and levee systems)
- Resident population
- Revenue base
- Legacy towns and other Delta residential communities
- Supporting services
- Quality of life
- Mild climate

Factors Affecting Delta Economic Sustainability

The Delta's economic sustainability will depend upon its ability to adapt as natural and man-made conditions affecting the Delta and its economy change. The research and public outreach conducted as part of the Framework Study have identified the following critical factors affecting virtually all Delta economic sectors and activities, which are expected to have impacts on the Delta's unique economic assets over time, and which are within the realm of influence of State and local decision-making:

- Water Policies
- Land Use Policies
- Flood Protection/Levee Maintenance Policies
- Habitat Policies
- Seismic Protection Policies

- Climate Change Policies
- Access
- Labor Availability
- Regulations
- Governmental Investments/Subventions
- Uncertainty

These factors are distinct from more general economic factors, such as international trade and financial trends, which will have more global effects on all economies, as opposed to effects on the Delta economy in particular.

In addition to these key factors that will broadly affect the Delta economy, the Framework Study has identified a number of factors specifically associated with individual Delta business sectors or economic activities.

The Economic Sustainability Plan that will be prepared in Phase 2 will develop recommendations for actions that the DPC can pursue in order to protect the Delta's economic assets and respond in the event of potential or actual changes in the factors affecting the Delta economy, in order to maintain the viability of the Delta economy over time.

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Introduction

This report represents the work completed in the first of a two-phase project to prepare an Economic Sustainability Plan for the Sacramento-San Joaquin Delta region under the direction of the Delta Protection Commission. The objective of this Framework Study is to establish a basic understanding of the Delta economy and to identify the key factors affecting the Delta economy which, if altered in the future, will have an impact on the Delta economy. The second phase of the project will be initiated in early 2011, and will culminate in July 2011 when the Delta Protection Commission adopts the Economic Sustainability Plan for the Sacramento-San Joaquin Delta.

The Framework Study is divided into two volumes. This first volume presents the framework for the preparation of the Economic Sustainability Plan. Key components of this volume include a section that provides an overview of the Delta economy and a section that identifies the key factors affecting the Delta economy, which must be addressed in developing the Economic Sustainability Plan. The second volume contains supporting background information and documentation of the Phase 1 study process.

Background on Delta Protection Commission

The Delta Protection Commission (DPC) is a state agency, established through the Delta Protection act of 1992. The DPC's mission is to preserve, protect, and enhance Delta resources for the enjoyment of current and future generations. This includes sustaining agriculture, protecting habitat, and increasing recreational opportunities within the Delta. Two main responsibilities of the DPC include establishing a Resource Management Plan to guide land use in the Delta Primary Zone (see Primary Zone definition below) and to serve as an appeal body for land use decisions made by local government on land within or impacting on the Primary Zone.

Additional information on the DPC can be found on the DPC's web site at:
www.delta.ca.gov.

Background on Delta Reform Act of 2009 (SBX7 1)

State legislation approved in 2009 re-organized the DPC and assigned DPC some new responsibilities, including preparation of the Economic Sustainability Plan. The Delta Reform Act addressed numerous Delta issues as well as responsibilities of agencies other than the DPC. One of the cornerstones of the Delta Reform Act was to achieve the two coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The Delta reform act specified that the coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.

The Delta's cultural, recreational, natural resource, and agricultural values are inextricably linked to economic activities that are carried out in the Delta, including farming, recreation, and tourism. Therefore, maintaining a healthy economy that supports these activities within the Delta is critical to protecting these values. Based on this, it is clear that there must be a balance between water supply reliability needs and Delta ecosystem needs with the needs for sustainability of the Delta economy in crafting policies to achieve the coequal goals for the Delta.

As discussed in this Framework Study, policies relating to Delta water supply reliability (including those dealing with water rights, conveyance, flows, and quality, and flood protection) and policies dealing with Delta ecosystem protection and enhancement can have direct or indirect effects on the Delta economy, either positive or negative. Whether Delta policies achieve the co-equal goals in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place, it will be critical for the State to consider how the methods implemented to achieve the coequal goals will affect the Delta economy and its sustainability over time, and ensure that adverse impacts on the economy are avoided or mitigated.

Highlights of the Delta Reform Act as it pertains to the DPC and this study include:

- Redefined the role of the DPC, narrowed membership to focus on local representation, and expanded DPC's role in economic sustainability.
- Requires DPC to create a regional Economic Sustainability Plan (ESP), as detailed below in the next section.
- Requires DPC to submit recommendations regarding potential expansion of or change to the Delta's Primary Zone to the Legislature. The DPC is handling this responsibility through a separate, concurrent effort called the Primary Zone Study.
- Authorizes DPC to seek National Heritage Area designation for Delta.

Background on the Economic Sustainability Plan

The Delta Reform Act provides general guidance on the contents of the Economic Sustainability Plan (ESP). Section 29759 states that the Economic Sustainability Plan shall include, but not be limited to, all of the following:

- Public safety recommendations, such as flood protection recommendations.
- The economic goals, policies, and objectives in local general plans and other local economic efforts, including recommendations on continued socioeconomic

sustainability of agriculture and its infrastructure and legacy communities in the Delta.

- Comments and recommendations to the Department of Water Resources concerning its periodic update of the flood management plan for the Delta.
- Identification of ways to encourage recreational investment along the key river corridors, as appropriate.

The Delta Reform Act requires that the DPC complete the ESP by July 1, 2011, so that the Delta Stewardship Council (another State Agency with policy-making responsibility within the Delta region) may consider the recommendations of the ESP as it develops the Delta Plan, which the Delta Reform Act requires the Stewardship Council to adopt by January 1, 2012.

Public and Stakeholder Participation in ESP Phase 1

Phase 1 of the ESP project has included extensive outreach to, and participation by members of the Delta community and other Delta stakeholders. Appendix A of Volume II contains a summary of the public outreach conducted in conjunction with this Framework Study. Delta Protection Commission staff also have a reference binder in the DPC office which includes copies of all outreach program materials, including meeting notices, presentations, attendee lists, and meeting notes. In addition, Delta Protection Commission staff will maintain the outreach database compiled as part of this study, to be utilized as a starting point for additional outreach planned for Phase 2 of the Economic Sustainability Plan project.

Overview of the Delta Geography

Shown in Figure 1, the boundary of the Legal Delta was defined by in the Delta Protection Act of 1992. The Legal Delta contains portions of six counties, as listed below:

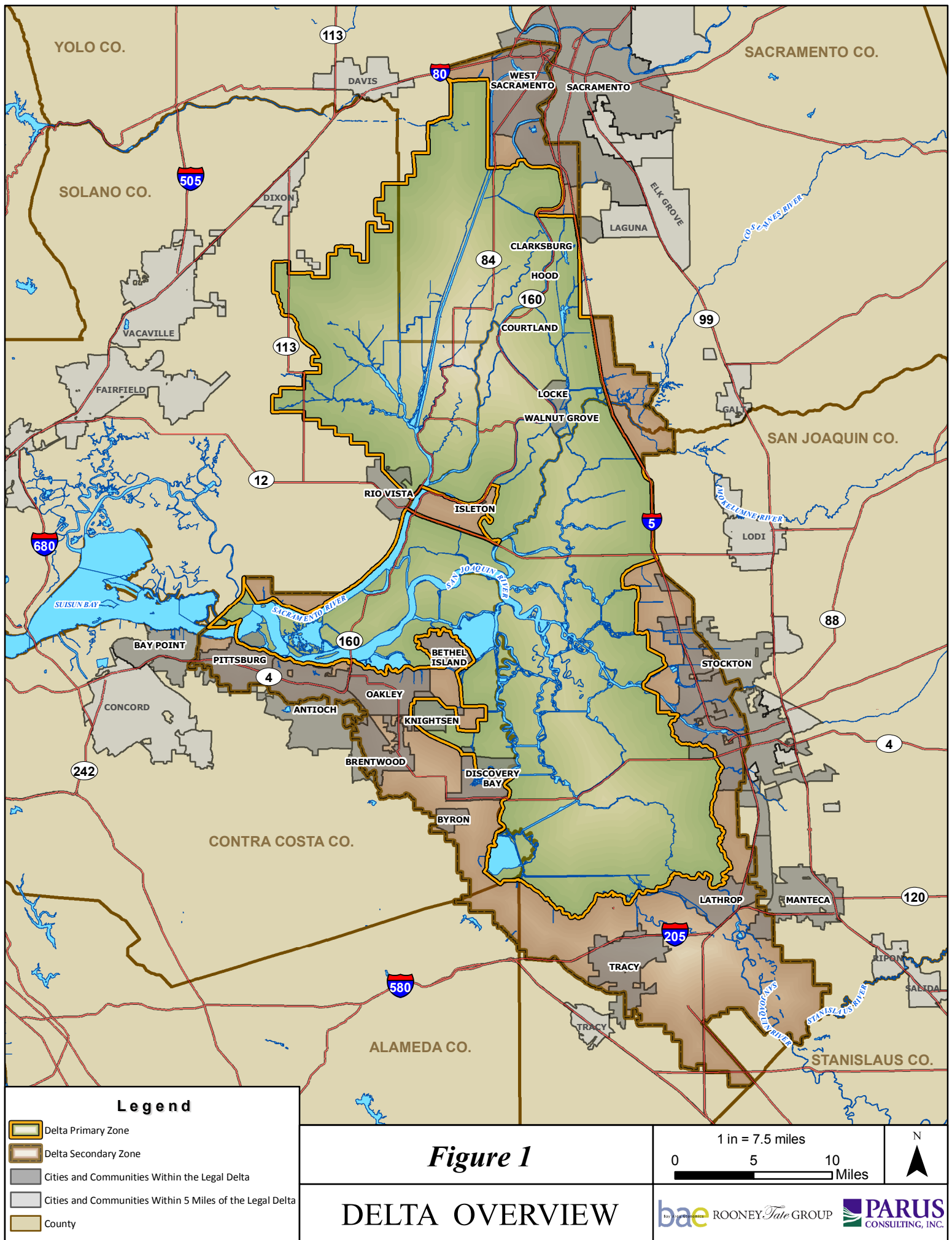
- Alameda County
- Contra Costa County
- Sacramento County
- San Joaquin County
- Solano County
- Yolo County

It should be noted that only a very small portion of Alameda County is located in the Legal Delta and the other five counties are often referred to as the “Delta Counties”.

Per the Delta Protection Act of 1992, the Delta is divided into two zones:

The **Primary Zone** is the area of primary jurisdiction for the DPC. Within the Primary Zone the DPC is charged with enhancing, and sustaining agricultural, recreational, and open space uses. The Primary Zone is largely rural in character.

The **Secondary Zone** consists of land at the periphery of the Legal Delta, including significant portions of fast growing cities such as Antioch, Oakley, Pittsburg, Tracy, and West Sacramento. Within the Secondary Zone, the DPC has some purview over land use through its responsibility is to review projects in the Secondary Zone that have the potential to impact the Primary Zone. The Secondary Zone contains most of the urbanized land within the legal Delta.



Framework Study Objectives

The objectives of Phase 1 of the ESP project include:

- Identify stakeholders to engage in the Economic Sustainability Plan process;
- Work with community members, stakeholders, and other interested parties to identify those key factors affecting the Delta economy that should be addressed in the ESP;
- Compile and review existing data regarding the Delta economy, to serve as background for the Framework Study itself and to serve as background for the Phase 2 ESP work; conduct initial research to fill data gaps, identify data gaps that should be addressed in Phase 2 of the ESP project, and;
- Provide recommendations on the public outreach program for Phase 2.

The Delta Economy

As detailed in Volume II of this Framework Study, the Delta economy encompasses an estimated 623,000 residents and businesses employing 146,000 workers. Previous studies have estimated the annual output of the Delta economy at \$20 billion or more. Appendix B in Volume II of this study contains detailed tables and narrative discussing Delta economic data which are summarized in this chapter. This chapter discusses the primary drivers of economic activity in the Delta, the primary industries that these drivers support, the key assets that the Delta economy relies upon, and the key factors with the potential to affect those assets and the Delta economy over time.

Economic criteria were not the primary consideration when State lawmakers created the Delta geographic boundaries presented in the prior chapter. Thus, it is difficult to define the Delta economy in terms of the boundaries of the Legal Delta, or the Primary or Secondary zones. The Delta boundaries do not conform to the geographic units that are used by the governmental entities that collect and compile data commonly used in the study of local and regional economies. The most commonly available economic data at the sub-state level are typically reported at the county level or, in some cases, at the ZIP Code level or at various levels of geography defined by the U.S. Census Bureau, none of which conform precisely to the Delta boundaries.

Lacking the resources to compile its own economic data within the Delta's precise boundaries, it is necessary for the Delta Protection Commission to rely on economic information collected by other entities to understand the Delta economy, and to accept the inherent limitations of the data. Nevertheless, examination of the available economic data does facilitate an understanding of the Delta economy in general terms, if not at the level of precision that would be ideal. Discussions in Appendix B in Volume II of this study contain recommendations for further data collection efforts that could help to enhance the understanding of the Delta economy.

Based on the research and outreach conducted to date, following is a summary of the key elements of a sustainable Delta economy.

Key Drivers of the Delta Economy

The key drivers of the Delta economy include:

- Demand for agricultural products
- Demand for tourism and recreation

These drivers create demand for the products and services of numerous industries within the Delta which create "products" for consumption within and for export outside the

region. These “exports” may take the form of goods or services produced by Delta businesses and provided to buyers located outside the Delta and they may also take the form of various tourism and recreation activities that occur within the Delta, but which attract visitors and their expenditures. Through their sales to consumers from outside the region, these “base” industries generate business and household income for the region. The re-spending of this income then supports additional “non-basic” industries within the region and outside the region through so-called “multiplier” effects.

Up-to-date and comprehensive estimates of the annual value of food production in the Delta were not available to support this Framework Study; however, prior studies that have attempted to quantify the annual production value of agriculture in the Delta indicate that the value may range from approximately one-half billion dollars per year to over a billion dollars.

Similarly, because the economic activities of tourism and recreation are spread among multiple different business sectors (e.g., restaurants, lodging, services, arts, entertainment, and recreation) and because these businesses are also supported by residents and business-to-business activity, it is difficult to precisely quantify the total economic value of tourism and recreation within the Delta. However, as an indicator of the magnitude of the importance of tourism and recreation within the Delta, recreational boating in the Delta was estimated to generate approximately \$247 million in annual expenditures within the Delta itself in 1995, plus additional expenditures outside the Delta. If this figure is adjusted for inflation, expenditures in the Delta would be worth approximately 50 percent more in 2010 dollars, or approximately \$370 million. In addition to recreational boating expenditures, other recreational and tourist activities such as fishing, hunting, bird watching, and sightseeing will contribute considerable expenditures in addition to the boating expenditures.

Demand for agricultural products and tourism and recreation have been the historic drivers of the Delta economy and it is expected that they will remain primary drivers of the Delta economy in the future. While demand from households who move to the Delta because of their attraction to the Delta lifestyle creates significant demand for goods and services within the Delta, it is not anticipated that the Economic Sustainability Plan will focus on catering to residential demand as a key driver. Rather, if the Economic Sustainability Plan can place a focus on maintaining the special assets that make the Delta economy healthy, this will also promote the quality of life valued by Delta residents.

Key Sectors of the Delta Economy

The demand for agricultural products and tourism and recreation activities supports substantial numbers of businesses and employees in the following business sectors:

- Agriculture
- Accommodation and Food Services
- Arts, Entertainment, and Recreation
- Retail
- Manufacturing
- Miscellaneous Services

The listing of sectors above is based on the largest business sectors in the Primary Zone of the Delta, as indicated by employment figures detailed in Appendix B of Framework Study, Volume II. The emphasis here on the business activity in the Primary Zone as opposed to the entire Legal Delta is because the Primary Zone data provide a better indicator of the relative importance of industries that are dependent upon the Delta's unique natural characteristics which distinguish it from the surrounding urbanized areas. Data on the distribution of business activity in the Secondary Zone alone, or for the entire Legal Delta will be biased towards businesses that are located in the urbanized areas on the fringe of the Delta and therefore will reflect more urban economic characteristics.

In addition to the key business sectors mentioned above, economic activities in or adjacent to the Delta related to energy production (natural gas, wind power, electric generation), storage (natural gas), transport (pipelines and power lines), and levee maintenance are locally important, with jobs likely spread across a number of different sectors, such as oil/gas extraction, utilities, government, and services.

The currently available data on Delta business activity, which reflects employment, does not reveal large figures for any of the energy-related activities mentioned above or for activities related to construction, maintenance, and operation of water supply facilities and infrastructure. This may be due to technical issues such as identifying the place of work of employees who may conduct most of their work in the Delta, but be based outside of the Delta. It should be noted; however, that income generated locally from these activities may be significant. In addition, investments in levee construction, repair, and maintenance protect Delta water, energy, and transportation infrastructure, which are critical links in the larger systems that provide support to the rest of the statewide economy.

Primary Zone Economic Activity

As mentioned above, because the periphery of the Secondary Zone includes some heavily urbanized areas with significant economic activity that is not necessarily tied to the Delta geography, but to the adjacent urban regions, estimates of economic activity in the Primary Zone of the Delta provide a better indicator of the unique nature of the economy that is tied to the Delta's special assets, which are discussed in more detail below.

Employment in the Primary Zone is dominated by jobs in the Agriculture, Forestry, Fishing, and Hunting sector, which represents approximately 2,831 jobs, or 38.1 percent of the jobs estimated by the U.S. Census Bureau Local Employment Dynamics, within the Delta area in 2008. The next largest sector is Accommodation and Food services, which 1,687 jobs, followed by Other Services (442 jobs), Manufacturing (375 jobs), and Construction (276 jobs). Other sectors accounting for more than two percent of primary zone employment include Arts, Entertainment, and Recreation; Educational Services; Retail Trade; Wholesale Trade; and Transportation and Warehousing.

Secondary Zone Economic Activity

While the dominant land use within the Secondary Zone is agriculture as it is in the Primary Zone, the economic activity in the Secondary Zone is quite diverse, due to the inclusion or portions of West Sacramento, Stockton, Tracy, and Contra Costa County cities and urban communities on the west edge of the Delta. Many urban functions are conducted in these areas and contribute significantly to Secondary Zone economic activity. Employment in the Agriculture, Forestry, Fishing and Hunting sector accounts for only 2.5 percent of the Secondary Zone (exclusive of Primary zone) jobs. The largest employment sector in the Secondary Zone is Educational Services, which represent 13.6 percent of the Secondary Zone employment and 18,900 jobs, according to the 2008 data from the Census Local Employment Dynamics system. The next largest sector is Retail Trade, with 17,500 jobs, followed by Health Care and Social Assistance, Accommodation and Food Services (12,400 jobs), Manufacturing (10,400 jobs), and Construction (9,549 jobs). Eight other sectors contributed at least two percent of the total Secondary Zone jobs.

Contributions of the Delta Economy to the Larger State Economy

Just as the Delta's primary economic drivers support numerous businesses in various sectors within the Delta itself, Delta economic activity is linked to the larger state economy. The economic activity within the Delta generates additional indirect and induced economic impacts ("multiplier" effects) in the statewide economy through purchases of good and services from firms located outside the Delta. Using econometric models such as the IMPLAN input-output model, or economic multiplier factors calculated by the U.S. Bureau of Economic Analysis, the additional multipliers from local economic activity are typically between 1.0 and 2.0. This means that for every direct job or dollar of economic output created, indirect and induced economic impacts tend to represent an additional one to two jobs or dollars. In addition, a draft paper prepared by the State Department of Water Resources states, "The economic multipliers for basic industries, such as mining, manufacturing, and agriculture, tend to be substantially greater than the multipliers for non-basic industries. The larger the region, the higher will be the multiplier. The lower the income, or the higher the unemployment rate in a region, the higher the multiplier. Individual sector income multipliers, such as agriculture, may be

larger than 2.5. In a study involving Oklahoma agriculture and food products, statewide income and employment multipliers often ranged from 2.5 to 3.0.”¹

As discussed in Appendix B in Volume II of this study, the available data were not adequate to generate an updated estimate of the total dollar value of the Delta economy, or to estimate the additional indirect and induced economic impacts of the Delta economy on the surrounding regions as part of this framework study.

In addition to the business impacts above, it is important to recognize the value of services that the Delta provides to the surrounding regions, including stewardship of irreplaceable cultural resources, protection of environmental resources that support economic activities elsewhere in the state, and protection of Delta infrastructure components that function as crucial pieces of statewide energy and transportation systems.

Key Assets Supporting the Delta Economy

The Delta’s key business sectors can sustain and even enhance themselves over time; however, to do to this, the local economy is dependent upon the region’s unique natural and man-made assets, which include:

- **Water supply and quality** to support agricultural, domestic, industrial, and habitat needs
- **Land supply** to accommodate economic activities, including prime farmland with rich soils that is particularly conducive to agriculture
- **Ecological health** to maintain the environmental quality that makes the Delta unique, including habitat areas and location on the Pacific Flyway
- **Accessibility** to accommodate movement of residents, goods, and visitors
- **Infrastructure** to provide necessary flood protection, transportation, gas and electrical distribution and other utilities and services, including agricultural support services
- **Resident population** to provide labor and create demand
- **Revenue base** to support public services (including education) and infrastructure investment and maintenance
- **Legacy towns and other Delta residential communities** which provide housing, civic facilities, cultural resources, and everyday shopping and services needed for a functional local economy.
- **Supporting services** from within the Delta and regions surrounding the Delta
- **Quality of life** to make the area attractive to visitors, residents, and businesses

¹ Rich, Jim. “Economic Activity Multipliers to Use for a Basic Industry, Such as Agriculture (Draft),” California Department of Water Resources, July 23, 2008.

- **Mild climate** (including microclimates) supporting specific crops cultivated in the Delta and facilitating outdoor recreational activity

Decisions about public policies that apply inside and outside the Delta will affect the Delta's assets, businesses, and communities, and will impact the sustainability of the Delta economy. When considering public policy, economic as well as environmental impacts of policies must be analyzed and mitigations specified in order to protect and enhance the Delta's assets.

These Delta assets support businesses and communities, which provide a tax base and are mutually supportive of public facilities and services. Loss of economically productive land adversely affects public services through loss of local revenues for infrastructure investment and maintenance.

The Delta provides water, food, and recreational opportunities for people living outside the Delta and the Delta's economic activity creates multiplier effects within the larger regional and statewide economies. While Delta levees, roads, railroads, ports, and other infrastructure protect and support the Delta economy, the regional and statewide economies are also interconnected with and dependent upon these systems. The assistance of the larger areas that also rely on Delta assets is needed to implement viable strategies to promote their sustainability.

Factors Affecting Delta Economic Sustainability

There are a number of factors that affect all sectors of the Delta economy, and other factors that may only affect certain segments of the economy. In addition, the diversity of the Delta economy and the variability of conditions in different locations throughout the Delta must be recognized. This means that changes in a given factor will not have uniform effects within the Delta and that solutions to challenges will also need to be fine-tuned to fit specific circumstances.

Appendix C in Volume II of this study contains a summary of the many Delta planning projects that could ultimately result in projects or policies that will affect one or more of these key Delta economic factors.

Definition of a Sustainable Delta Economy

The definition of a sustainable Delta economy should not only include the concepts of maintaining and supporting what exists, but also an economy that can adapt and thrive over time. The Delta economy is not static, and must be allowed to adapt to changes in the natural and man-made environment (including policy changes as well as physical changes), so that it can thrive on a long-term basis.

Key Factors Affecting the Delta Economy as a Whole

There are a number of factors that were identified during the Phase 1 research and outreach on a recurring basis as affecting most, if not all, of the sectors of the Delta economy in some way. These factors affecting the Delta Economy as a whole include:

- **Water Policies** – Which affect the ability to divert water and the quantity and quality of water available to support the Delta economy will affect the viability of different businesses that are water dependent, or water-oriented.
- **Land Use Policies** – Directly affect the Delta economy through restrictions and/or incentives that affect the types of economic activities that can be pursued in the Primary Zone. They also affect the supply of housing in the Delta to accommodate the labor force needed by Delta agriculture and other businesses. Land use policies in the Secondary Zone, particularly regarding urbanization, will affect the Delta economy through impacts on land uses that are permitted in the Primary Zone and potentially exacerbate environmental stressors affecting the Delta.

- ***Flood Protection/Levee Maintenance Policies*** – Affect where businesses can operate and the costs of operations (e.g., flood insurance requirements, levee maintenance assessments). Because many key roads are built upon levees, inadequate levee maintenance and/or lack of needed upgrades jeopardizes the Delta transportation network.
- ***Habitat Policies*** – Affect the land available for economic activities, affect the tax base, and can indirectly affect the activities on nearby properties due to environmental restrictions or seepage.
- ***Seismic Policies*** – Affect the approach to levee protection and building construction and safety, which will have impacts throughout the Delta.
- ***Climate Change Policies*** – While agreement does not exist in the Delta regarding climate change, there is recognition that the Delta economy must be ready to adapt to natural changes; concerns about potential impacts of sea level rise, increases in severe storms, and more rapid snowpack melting related to climate change compound concerns about flood protection in particular. Climate change policies will affect numerous aspects of the Delta economy including transportation and other equipment use, energy use, and building construction, operation, and maintenance.
- ***Access*** – Affects the cost of getting goods to market, receiving supplies, ability to attract labor, and attraction of visitors. In addition to the network of roads, highways, and shipping channels and ports, broadband telecommunications availability is also an important access issue within the Delta.
- ***Labor*** – Is a key input for every business sector and has a significant impact on business viability. Policies regarding maintenance and construction of housing within the Delta will affect labor availability. Educational resources for Delta communities will affect the quality of the labor force.
- ***Regulations*** – Delta specific regulations affect the cost and complexity of doing business in the Delta and the ability of the Delta economy to adapt as conditions change.
- ***Governmental Investments/Subventions*** – The Delta economy is dependent upon State and federal funding that leverages local dollars to construct and maintain infrastructure that serves the local area as well as the surrounding regions. This includes investments in Delta infrastructure that protects water, transportation

and energy systems that serve much of the State's urban areas as well as major agricultural regions outside the Delta.

- **Uncertainty** - regarding the impact of future policy decisions affecting the Delta exacerbates the impact of the factors identified above. Key man-made uncertainties include: water policies, flood control policies, habitat policies, and infrastructure changes (e.g., changes in conveyance). Naturally occurring changes such as climate change and policies to deal with climate change also impact the factors identified above. With numerous plans and decisions pending, Delta stakeholders do not have a clear picture of what the future holds. This uncertainty creates an environment of enhanced risk, which impacts long-term planning and investment in the local economy.

Specific Factors Affecting Key Activities and Sectors

As noted previously, a range of factors will have differential effects on the different sectors of the Delta economy. Following are specific factors that affect core Delta activities and industries. It should also be reiterated that the business impacts of these factors will vary by location within the Delta.

Agriculture

- **Land supply** – is a requirement for all types of agriculture and supply is decreasing due to competition with other uses, including, but not limited to, habitat. Loss of farmland can result in loss of economic productivity, jobs, local government revenue base, and support for other related industries.
- **Water** – Changes in rights, supply, quality, and/or cost will have direct impacts on agricultural viability.
- **Regulations** – Agriculture is a highly regulated industry and the trend is towards increased regulation specific to the Delta, which increases costs and limits the ability of agriculture to adapt.
- **Invasive species/pests** – create direct threats to crops as well as threats to market access, and invasive species problems are increasing.
- **Transportation** – transportation is a key component of agricultural production costs and a robust transportation infrastructure that can accommodate large trucks is needed. With loss of local processing facilities, transportation infrastructure is essential to move crops to market. Traffic from other sources, such as tourism or inter-regional traffic, can create conflicts with agricultural transport.

- **Critical mass** – the agricultural sector relies on having a critical mass in order to operate efficiently; critical mass is needed to provide sufficient support for local support services and suppliers upon which farmers are dependent.
- **Changes in market demand** – “local food” movement, along with interest in natural and organic foods is creating new market opportunities given the Delta’s proximity to large concentrations of urban consumers, rich soils, and its many small, family-owned farms. Carbon sequestration and feedstock for bio fuels represent potential market opportunities for farmers.
- **Land use policies** - Updating land use controls to expand allowable uses on agricultural property such as wineries, packing sheds and processing facilities can help farmers to diversify their income streams and enhance sustainability. Land use policies should avoid conflicts with established and evolving agricultural activities.
- **Flood Protection** – Significant changes to water policies and/or land use policies that impact agriculture can reduce resources available for levee maintenance and cause more demand for alternative uses of lands in the Primary Zone in order to sustain local efforts to maintain levee infrastructure.

Food Processing and Other Industrial Activities

- **Land use regulations** – will affect the locations where these activities can be carried out.
- **Other regulations** – will affect the complexity, and cost of doing business. Application of urban-centric regulations may not be appropriate for Delta uses.
- **Utilities** – reliable and affordable utilities are necessary to support industrial uses.
- **Labor supply** – availability of a labor pool with a range of skills is necessary to support industrial activities.

General Tourism

- **Diversity of recreation, entertainment, and cultural attractions** – is necessary to attract tourists from across a broad demographic spectrum and a wide geographic range.

- **Availability of services, retail, accommodations, and infrastructure to support tourists** – These are necessary ingredients for a tourist destination and critical to encouraging visitors to spend more time and money in the Delta. In addition to private facilities such as restaurants and overnight accommodations, provision of appropriate public services, such as trash receptacles, RV and boat pump-outs, public restrooms, and designated public recreation facilities providing access to the water and public land will help minimize the negative impacts of tourists on the natural environment and on private property.
- **Environmental quality** – Most Delta tourism and recreation activity is water dependent or water-related. The Delta's competitive advantage in tourism is its unique natural environment; deteriorating environmental quality will discourage tourism.
- **Image/awareness of the Delta** – a positive image and strong market awareness is necessary to attract visitors from the competitive marketplace. Visitors need comprehensive information resources to help them plan their activities in the Delta; increased marketing is needed to educate markets about the Delta's visitor offerings.
- **Demographic and cultural shifts** – will affect the types of attractions and activities that will draw Delta tourists; this will require reinvestment and adaptation.

Boating

- **Quantity and quality of water** – the Delta relies on sufficient flows and quality of water in order to maintain its distinction as a unique freshwater boating destination.
- **Navigability of waterways** – the ability to travel through the network of waterways is a key feature of the Delta boating experience, which can be affected by human-made structures as well as invasive plants.
- **Boat launches and marinas** – provide access for boaters to the Delta waterways, including facilities for non-motorized watercraft.
- **Support services for boats** (e.g., fuel, repairs, pumpouts, boat storage) – address vital needs of boat owners.
- **Access to towns via docks** – is needed so that boaters can take advantage of lodging, dining, shopping and services, and attractions.

Fishing and Hunting

- **Quantity and quality of water** – will have direct effects on the types, quantities, and health of fish in the Delta and on the overall fishing experience as well as critical habitat for waterfowl.
- **Health of habitat areas** - is necessary to support a diversity of fish and game populations, which in turn will support a range of fishing and hunting activities throughout the year, including fishing by people who rely on Delta fish for significant portions of their diet. The Delta is an important part of the Pacific Flyway.
- **Policies on invasive species** – will affect the types of fish available to anglers in the Delta.
- **Access to water and land** – parking, piers/docks, boat launches, and access to river banks are necessary for land- and boat-based anglers. Hunters also require access to public or private land.
- **Support services for fishermen and hunters** (e.g., bait shops, guide services, hunting clubs) – facilitate fishing and hunting activity and increase the local economic impacts from these activities.

Retail, Restaurants, Services, Visitor Accommodations

- **Infrastructure and buildings** – availability and cost will directly affect viability of businesses and the capacity to attract and serve the market.
- **Accessibility/visibility** – is necessary to attract customers.
- **Demand from residents, businesses, and tourists** – patronage from all three segments is necessary for Delta businesses to survive, particularly in light of the seasonal nature of tourism.
- **Labor supply** – is necessary to support these labor-intensive businesses. Given commuting costs and typical wages in these sectors, ability for employees to live near work will be critical to employee recruitment and retention.

Local Government/Public Services

- **Revenue base** – maintaining a local revenue base to support public services is critical to supporting local government’s stewardship responsibilities in the Delta and the critical public services provided to Delta residents, businesses, and visitors. There is concern about the potential for increases in publicly-owned or otherwise tax-exempt land ownership in the Delta and erosion of the local tax base as a result. A healthy Delta economy also generates other local revenues, such as sales taxes, transient occupancy taxes, and others.
- **State and federal funding** – continuance of subventions and other funding from state and federal sources is necessary to leverage local dollars to protect and maintain critical infrastructure that serves the Delta as well as the surrounding regions. It is critical that secure long-term funding sources be established to address the maintenance needs of new habitat areas, public lands, and mitigation projects so that they do not become a burden on local government.
- **Residential population base** – maintaining a residential population base within the Delta is critical to public services that rely on economies of scale in order to remain viable. With their vested interest, local residents are the first in responding to high water events and other threats to infrastructure and the environment. Many public and non-profit organizations rely on local residents to volunteer and make philanthropic contributions.
- **State and federal policies** – affect local government operations, such as water and sewer systems. State and federal oversight of local government within the Delta zone will also impact local government’s ability to develop and implement plans.